

```
90
20      .OPT OBJ
30      *=   $8500
40 CIOV  =   $E456
50 DSKINV =   $E453
60 SIOV  =   $E459
70 DOSVEC =   $0A
80 DOSINI =   $0C
90 COLDST =   $0244
0100 KBDHND = $E420
0110 DISPLA = $E410
0120 GETCH = $8300      ; POINTER KEYBD HANDLER
0130 OUTCH1 = $8302     ; POINTER TO DISPLA HANDLER
0140 CHAR =   $02FA
0150 ATACHR = $02FB
0160 INBUF = $8400      ; TEMP WORK AREA
0170 SDRIVE = $8304     ; SOURCE DRIVE
0180 DDRIVE = $8305     ; DEST DRIVE
0190 NUMBER = $8306     ; NUMBER OF COPIES
0200 FFLAG = $8307     ; FORMAT FLAG
0210 SECTLO = $8308
0220 SECTHI = $8309
0230 D301 =   $8310     ; SAVED
0240 WRTC =   $8312     ; VERIFY FLAG
0250 BKTEST = $8313     ; BANKING TEST
0260 TNUM =   $8314
0270 TEMP1 = $8315
0280 TEMP2 = $8316
0290 BUSCMD = $8317
0300 DENFLG = $8318
0310 SRANGE = $8320
0320 KCOUNT = $8323
0330 TBUFLO = $00      ; INITIAL IO BUFFER
0340 TBUFHI = $40
0350 DDEVIC = $0300     ; BUS I.D. #
0360 DUNIT = $0301     ; DEVICE #
0370 DCOMND = $0302     ; BUS COMMAND
0380 DSTATS = $0303     ; STATUS
0390 DBUFLO = $0304     ; BUFFER POINTER LO
0400 DBUFHI = $0305     ; BUFFER POINTER HI
0410 DTIMLO = $0306     ; DISK TIME OUT
0420 DBYTLO = $0308     ; # OF BYTES LO
0430 DBYTHI = $0309     ; # OF BYTES HI
0440 DAUX1 = $030A     ; SECTOR # LO
0450 DAUX2 = $030B     ; SECTOR # HI
0460 RAMTOP = $6A
0470 ;SET UP TITLE
0480 START JSR INIT     ; INIT&PROTECTION
0490 NCOPY LDA #1
0500      STA SECTLO     ; POINT TO FIRST
0510      LDX #MESS1&255
0520      LDY #MESS1/256
0530      JSR PUTLIN     ; COPYRIGHT
0540      LDX #MESS2&255
0550      LDY #MESS2/256
0560      JSR PUTLIN     ; NUM OF COPIES?
0570      LDX #0
0580      STX SECTHI
0590      STX KCOUNT
0600      STX DENFLG
0610      LDA #$D1
0620      STA SRANGE
0630      LDA #2
0640      STA SRANGE+1
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0650 KGET JSR GETKEY ;GET CHARACTER
0660     LDX KCOUNT
0670     LDA ATACHR
0680     CMP #'X      ;EXIT
0690     BNE CHKD
0700     LDA D301      ;SAVED REG
0710     STA $D301     ;SET IT NORMAL
0720     RTS
0730 CHKD CMP #$44     ;"D" FOR DOUBLE DENSITY
0740     BNE CHKH
0750     STA DENFLG    ;SHOW DD
0760     JMP PRCH
0770 CHKH CMP #'H      '    ;$171 SECTORS
0780     BNE CHKQ
0790     LDY #$72
0800     STY SRANGE
0810     LDY #1
0820     STY SRANGE+1
0830     JMP PRCH
0840 CHKQ CMP #'Q      '    ;$5A0 SECTORS
0850     BNE CHKO
0860     LDY #$A1
0870     STY SRANGE
0880     LDY #5
0890     STY SRANGE+1
0900     JMP PRCH
0910 CHKO CMP #'O      '    ;$B40 SECTORS
0920     BNE CKDIG
0930     LDY #$41
0940     STY SRANGE
0950     LDY #$0B
0960     STY SRANGE+1
0970 PRCH JSR OUTCH    ;PRINT CHAR
0980     JMP KGET
0990 CKDIG CMP #$30    ;LESS THAN 0?
1000     BCC KGET
1010     CMP #$3A      ;MORE THAN 9
1020     BCC NEXTCH
1030     CMP #$9B      ;RETURN?
1040     BNE KGET
1050 NEXTCH STA INBUF,X
1060     JSR OUTCH
1070     INC KCOUNT
1080     CMP #$9B      ;RETURN?
1090     BNE KGET
1100     LDA KCOUNT
1110     CMP #4
1120     BCC K4
1130     JMP NCOPY
1140 K4   CMP #2
1150     BNE TWODIG
1160     LDA INBUF
1170     SEC
1180     SBC #$30
1190     JMP STNUM
1200 TWODIG LDA INBUF ;ASCII TO HEX
1210     SEC
1220     SBC #$30
1230     ASL A
1240     STA NUMBER
1250     ASL A
1260     ASL A
1270     CLC
1280     ADC NUMBER
1290     STA NUMBER
1300     LDA INBUF+1

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1310      SEC
1320      SBC #$30
1330      CLC
1340      ADC NUMBER
1350 STNUM STA NUMBER
1360      STA TNUM
1370 SRCDRV LDX #MESS3&255
1380      LDY #MESS3/256
1390      JSR PUTLIN ;SOURCE DRIVE?
1400 K2   JSR GETKEY
1410      LDA ATACHR
1420      CMP #$31 ;LESS THAN 1?
1430      BCC K2
1440      CMP #$35 ;MORE THAN 4?
1450      BCS K2
1460      SEC
1470      SBC #$30
1480      STA SDRIVE
1490      JSR MYOUT
1500 DESDRV LDX #MESS4&255
1510      LDY #MESS4/256
1520      JSR PUTLIN ;DESTIN DRIVE?
1530 K3   JSR GETKEY
1540      LDA ATACHR
1550      CMP #$31 ;LESS THAN 1?
1560      BCC K3
1570      CMP #$35 ;MORE THAN 4?
1580      BCS K3
1590      SEC
1600      SBC #$30
1610      STA DDRIVE
1620      JSR MYOUT
1630 VERIFY LDX #MESS7&255
1640      LDY #MESS7/256
1650      JSR PUTLIN ;VERIFY DISK?
1660      JSR GETKEY
1670      LDA #$50
1680      STA WRTC ;NON VERIFY
1690      LDA ATACHR
1700      CMP #$59 ;Y
1710      BNE VER1
1720      LDA #$57
1730      STA WRTC
1740 VER1 JSR MYOUT
1750 FORMAT LDX #MESS5&255
1760      LDY #MESS5/256
1770      JSR PUTLIN ;FORMAT DISK?
1780      JSR GETKEY
1790      LDA ATACHR
1800      STA FFLAG
1810      JSR MYOUT
1820 MAIN JMP SRCMSG ;GO WAIT FOR START
1830 RSRC LDA #$40
1840      STA BUSCMD
1850      JSR READ
1860      JMP DSTMSG
1870 WLOOP JSR FMTDSK
1880 WRT LDA #$80
1890      STA BUSCMD
1900      JSR WRITE
1910      DEC TNUM ;NUMBER OF COPIES
1920      LDA TNUM ;IN PASS
1930      CMP #0
1940      BNE DSTMSG
1950      STA FFLAG ;TURN OFF FORMAT FLAG
1960      LDA NUMBER ;GET READY FOR NEXT

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1970      STA TNUM      ;PASS
1980      JSR TDONE      ;SEE IF FINISHED
1990 SRCMSG JSR MSG6
2000      JSR BEGIN
2010      JMP RSRC      ;GO READ MORE SECTORS
2020 DSTMSG JSR MSG8
2030      JSR BEGIN
2040      JMP WLOOP      ;GO WRITE NEXT DISK
2050 BEGIN LDA $D01F
2060      CMP #6        ;IS START PUSHED
2070      BNE BEGIN      ;NO. GOTO BEGIN
2080      RTS
2090 FMTDSK LDA FFLAG    ;FORMAT FLAG
2100      CMP #$59      ;"Y"
2110      BNE CONT      ;NO.GOTO CONT
2120      LDA #$80      ;TIMEOUT 120 SEC.
2130      STA DTIMLO
2140      LDA DDRIIVE
2150      STA DUNIT
2160      LDA #$21      ;FORMAT
2170      STA DCOMND
2180      JSR GETRDY
2190      LDA #$40
2200      STA DSTATS
2210      STA DBUFLO
2220      LDA #$80
2230      STA DBUFHI    ;FOR STATUS
2240      JSR SIOV      ;GO FORMAT DISK
2250      BMI FMTDSK    ;TRY AGAIN IF BAD
2260      LDA #TBUFHI
2270      STA DBUFHI
2280 CONT RTS
2290 READ LDA SDRIVE    ;SOURCE DRIVE
2300      STA DUNIT
2310      LDA #$52      ;READ COMMAND
2320      STA DCOMND
2330      LDA SECTLO    ;STORE IN TEMP SO WE
2340      STA TEMP1      ;KNOW WHERE TO WRITE
2350      STA DAUX1      ;AND GET READY
2360      LDA SECTHI    ;FOR I/O CALL
2370      STA TEMP2
2380      STA DAUX2      ;SECTOR TO READ
2390      JSR GETRDY
2400      LDA #TBUFLO
2410      STA DBUFLO
2420      LDA #TBUFHI
2430      STA DBUFHI    ;BUFFER POINTERS
2440 CONT2 JSR SIOV
2450      JSR INCSD
2460      BCC CONT2
2470      RTS
2480 INCSD CLC          ;INCREMENT SECTOR
2490      LDA SECTLO    ;AND BUFFER PIONTERS
2500      ADC #1
2510      STA SECTLO
2520      STA DAUX1
2530      LDA SECTHI
2540      ADC #0
2550      STA SECTHI
2560      STA DAUX2
2570      CMP SRANGE+1
2580      BNE CONT1
2590      LDA SECTLO
2600      CMP SRANGE
2610      BNE CONT1
2620      LDA #$01      ;PRINT IN FIRST

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2630      STA $D301      ;RAM BANK AND
2640      LDA #$10      ;SETUP TEST BYTE
2650      STA BKTEST    ;FOR 1ST RAM BANKS
2660      SEC          ;SET CARRY WHEN DONE
2670      RTS
2680 CONT1 JSR GETRDY
2690      RTS
2700 WRITE LDA DDRIVE  ;GET READY
2710      STA DUNIT     ;TO WRITE
2720      LDA WRTC      ;WRITE COMMAND
2730      STA DCOMND
2740      LDA #10
2750      STA $4D       ;ATTRACT FLAG
2760      STA DTIMLO
2770      LDA TEMP1
2780      STA SECTLO
2790      STA DAUX1
2800      LDA TEMP2
2810      STA SECTHI
2820      STA DAUX2
2830      JSR GETRDY
2840      LDA #TBUFLO
2850      STA DBUFLO
2860      LDA #TBUFHI
2870      STA DBUFHI
2880 CONT3 JSR SIOV
2890      JSR INCSD
2900      BCC CONT3
2910      RTS
2920 GETRDY LDA #$31
2930      STA DDEVIC
2940      LDA BUSCMD
2950      STA DSTATS
2960      LDA DENFLG
2970      BEQ SINGLE
2980      LDA DCOMND
2990      CMP #$21
3000      BEQ B256
3010      LDA SECTLO
3020      CMP #4
3030      BCS B256
3040      LDA SECTHI
3050      BNE B256
3060 SINGLE LDA #0
3070      STA DBYTHI
3080      LDA #$80
3090      STA DBYTLO
3100      CLC
3110      LDA DBUFLO
3120      ADC #$80
3130      STA DBUFLO
3140      LDA DBUFHI
3150      ADC #0
3160      STA DBUFHI
3170      JMP RDT
3180 B256 LDA #0
3190      STA DBYTLO
3200      LDA #1
3210      STA DBYTHI
3220      CLC
3230      LDA DBUFHI
3240      ADC #1
3250      STA DBUFHI
3260 RDT LDA DBUFHI    ;DON'T DELETE THIS DUMMY
3270      CMP #$7F     ;AT TOP OF BANK?
3280      BCC RDT1     ;NO

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3290      CLC
3300      LDA $D301
3310      ADC #2          ;GO TO ANOTHER BANK,M1=2,M2=4,M3=1
3320      CMP BKTEST     ;ANY FIRST BANKS LEFT
3330      BCC RDT3       ;YES
3340      CLC           ;SET UP NEXT SET OF BANKS
3350      ADC #$10
3360      STA $D301
3370      CLC
3380      LDA #$20       ;M1=$20,M2=$10,M3=$40
3390      ADC BKTEST
3400      STA BKTEST
3410      BCC RDT5
3420      LDA D301      ;NO BANKS LEFT
3430      STA $D301     ;RESET TO NORMAL
3440      RDT4 RTS
3450      RDT3 STA $D301
3460      RDT5 LDA #0    ;RESET BUFFERS FOR
3470          STA DBUFLO  ;XTRA BANKS
3480      LDA #$40
3490      STA DBUFHI
3500      CLC
3510      RTS
3520      MESS2 .BYTE "HOW MANY COPIES? (X TO EXIT)","$9B
3530      MESS3 .BYTE "SOURCE DRIVE?",$9B
3540      MESS4 .BYTE "DESTINATION DRIVE?",$9B
3550      MESS7 .BYTE "VERIFY WRITES?(Y OR N)","$9B
3560      MESS5 .BYTE "FORMAT DESTINATION (Y or N)?",$9B
3570      MESS6 .BYTE "}}INSERT SOURCE DISK, PUSH START}",$9B
3580      MESS8 .BYTE "}}INSERT DESTINATION DISK, PUSH START}",$9B
3590      MSG6 LDX #MESS6&255
3600          LDY #MESS6/256
3610          JMP PUTLIN  ;SOURCE DISK
3620      MSG8 LDX #MESS8&255
3630          LDY #MESS8/256
3640          JMP PUTLIN  ;NEXT DISK
3650      TDONE LDA SECTLO
3660          CMP SRANGE
3670          BNE TRTS
3680          LDA SECTHI
3690          CMP SRANGE+1
3700          BNE TRTS
3710          LDA D301
3720          STA $D301   ;RESTORE MAP REG
3730          PLA        ;CLEAN UP STACK
3740          PLA        ;BEFORE JMP OUT OF SUBROUTINE
3750          JMP START  ;RESTART
3760      TRTS RTS
3770      MYOUT LDA ATACHR
3780      OUTCH JMP (OUTCH1) ;TO OS TO PRINT CHARACTER
3790      GETKEY JMP (GETCH) ;GO TO OS AND GET KEY
3800      INIT LDA $D301   ;BANK MAP
3810          STA D301     ;SAVE IT FOR EXIT
3820          LDA #$01     ;SET UP MMU FOR FIRST RAM BANK
3830          STA $D301    ;M1&M3=1,M2=3
3840          LDA #$10     ;SETUP TEST BYTE
3850          STA BKTEST   ;FOR 1ST RAM BANKS
3860          LDA #10
3870          STA DTIMLO   ;SET DEVICE TIMEOUT
3880          LDA KBDHND+5 ;SET UP FOR CALL TO GET KEYBOARD CHARACTER
3890          STA GETCH+1  ;VIA JMP(GETCH)
3900          LDA KBDHND+4
3910          CLC
3920          ADC #1       ;FOR SCREWED UP VECTOR TABLE
3930          STA GETCH    ;IF WE CROSS PAGE BOUNDARY
3940          BCC OUTCH

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```
3950      INC GETCH+1 ;ADD 1 TO HIGH BIT
3960 SOUTCH LDA DISPLA+7 ;SAME AS ABOVE TO PRINT CHR.
3970      STA OUTCH1+1 ;VIA JMP(OUTCH1)
3980      LDA DISPLA+6
3990      CLC
4000      ADC #1
4010      STA OUTCH1
4020      BCC GOON
4030      INC OUTCH1+1
4040 GOON RTS
4050 MESS1 .BYTE "M1COPY V1.1(C)1990 NEWELL INDUSTRIES",$9B
4060 PUTLIN TXA      ;PUT LINE ON SCREEN
4070      LDX #0
4080      STA $0344,X
4090      TYA
4100      STA $0345,X
4110      LDA #9
4120      STA $0342,X
4130      LDA #$FF
4140      STA $0348,X
4150 END JMP CIOV
4160      .END
```